Datrium™

Manage a PB/day of artifacts without breaking a sweat (or your infrastructure)

Jenkins/DevOps World

Anupam Garg
Kyle Harris

Warning

This is supposed to be a “lightning” talk, but I’m from the south …

Whole lotta data

Our build/test cycles generate a lot of data

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115 GB of build artifacts (product + toolchain + test binaries)

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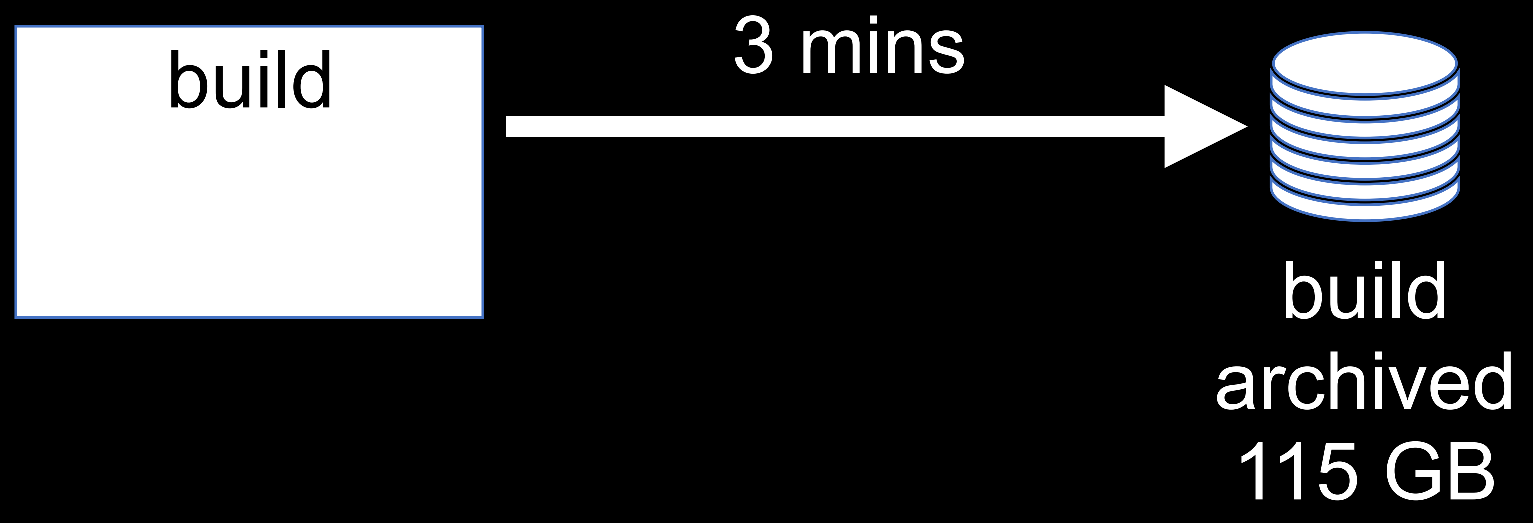
Whole lotta data

Our build/test cycles generate a lot of data

115 GB of build artifacts (product + toolchain + test binaries)
500 slaves provisioned daily to run tests (each requiring a copy)
6000 desktop tests (single host testbed)
1100 virtual tests (multple hosts testbed)

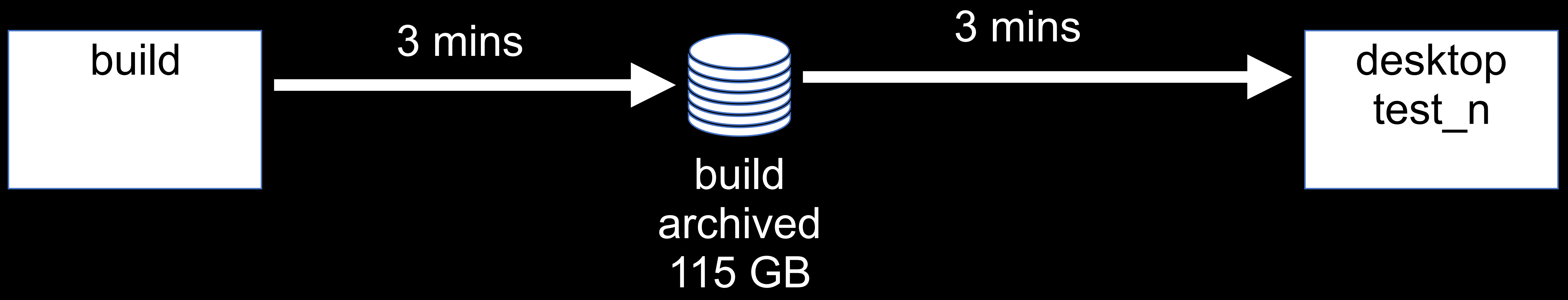
Traditional copy artifact workflow

(hop through master not shown)



Traditional copy artifact workflow

(hop through master not shown)



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Traditional copy artifact workflow

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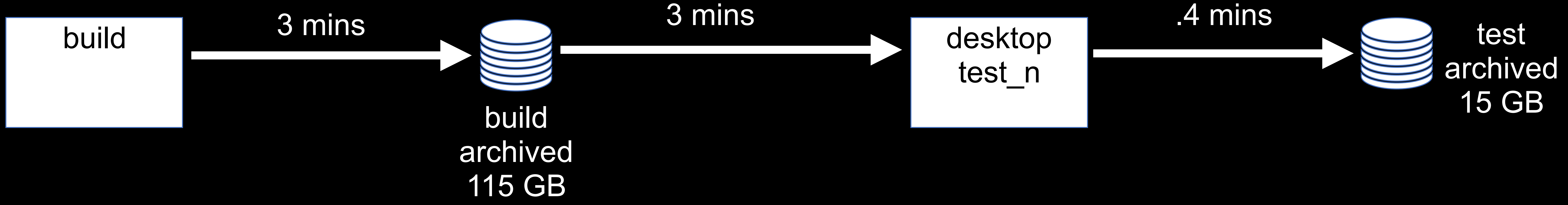
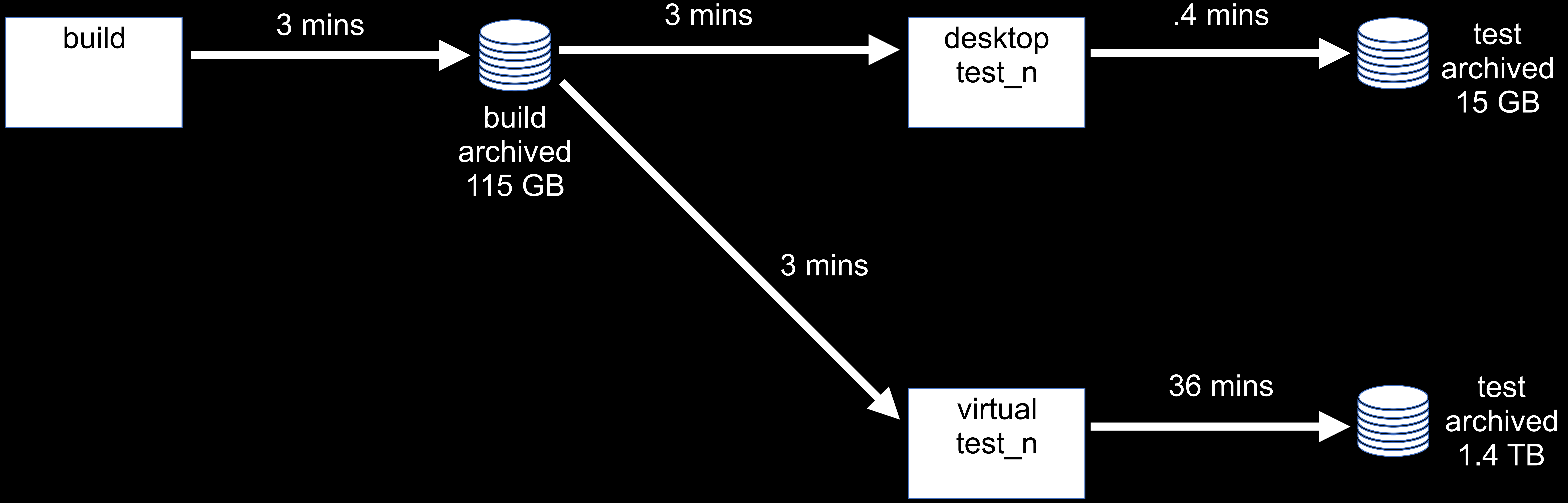


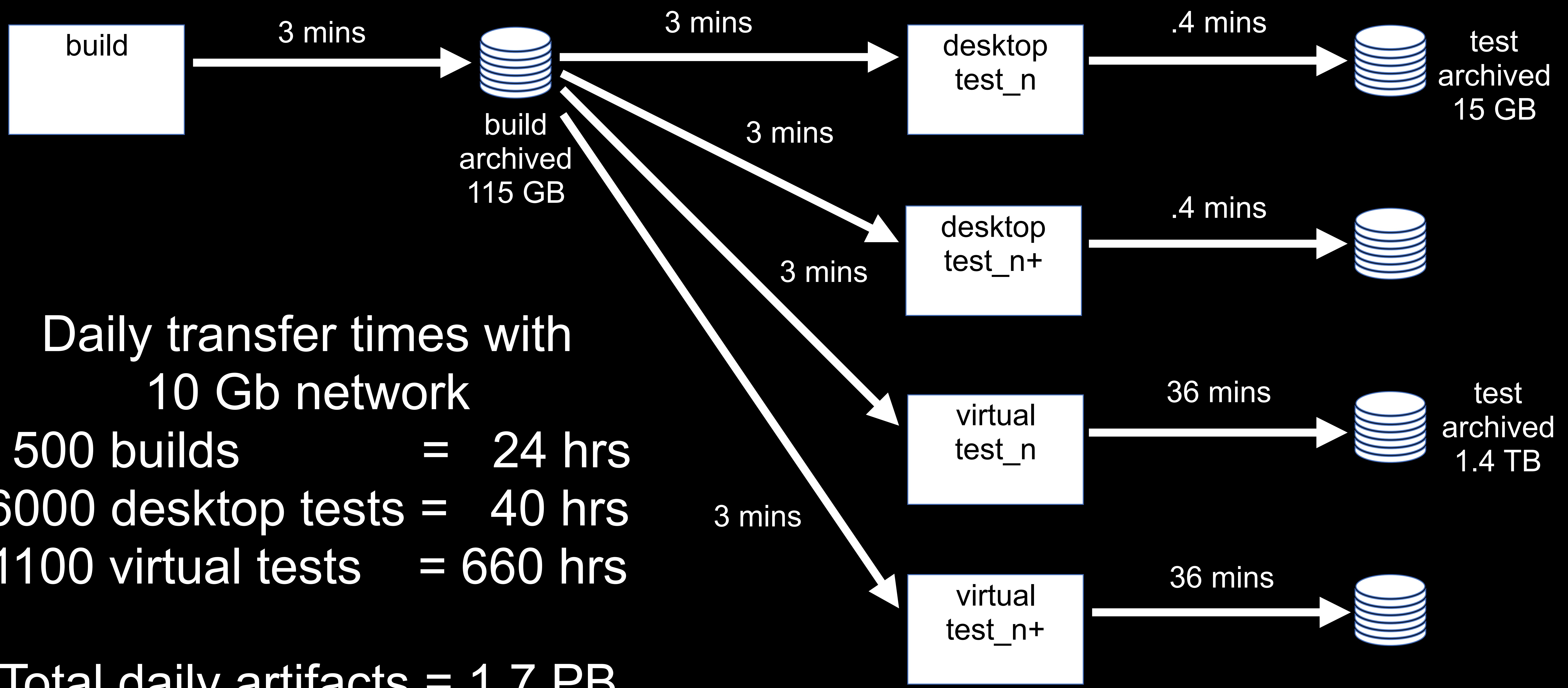
Traditional copy artifact workflow

(hop through master not shown)



Traditional copy artifact workflow

(hop through master not shown)

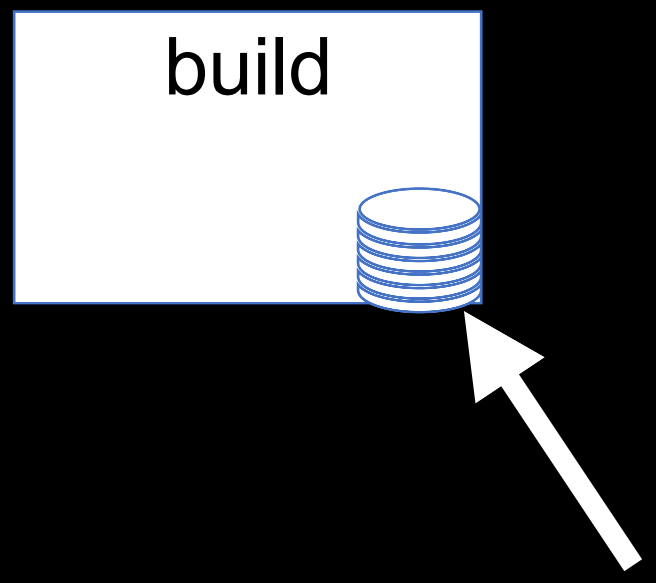


Daily transfer times with 10 Gb network

500 builds = 24 hrs
6000 desktop tests = 40 hrs
1100 virtual tests = 660 hrs

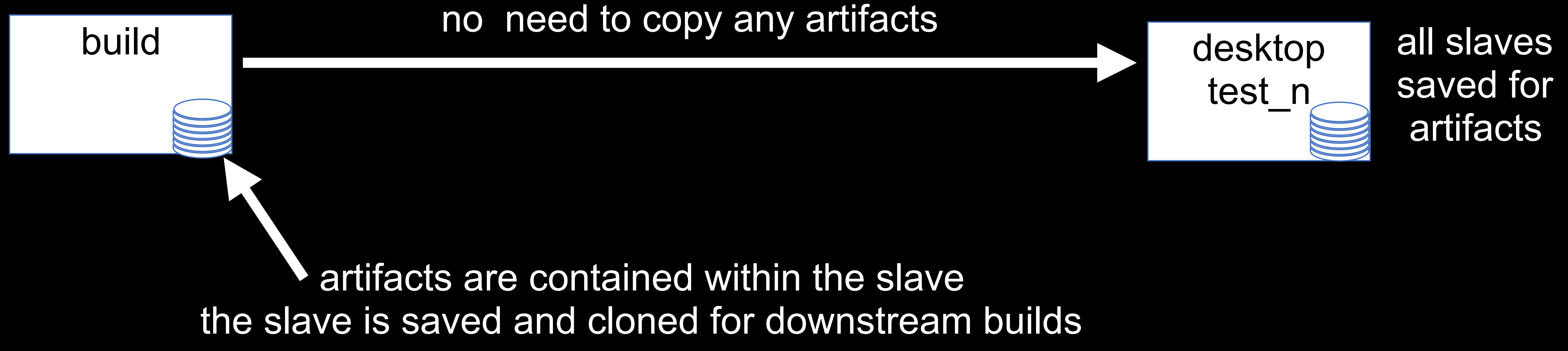
Total daily artifacts = 1.7 PB

Zero copy cloning workflow



artifacts are contained within the slave
the slave is saved and cloned for downstream builds

Zero copy cloning workflow



build

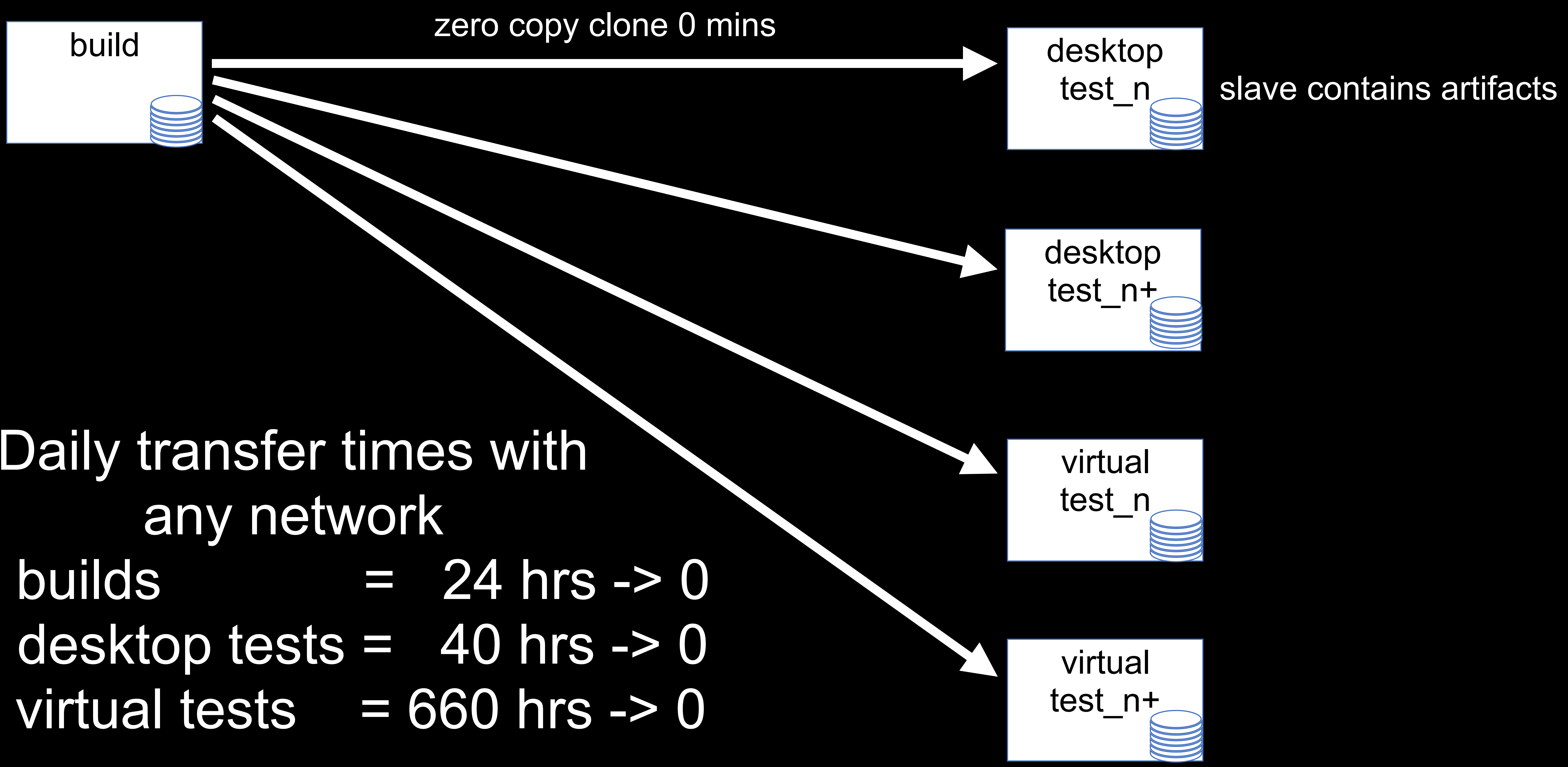
no need to copy any artifacts

desktop
test_n

all slaves
saved for
artifacts

artifacts are contained within the slave
the slave is saved and cloned for downstream builds

Zero copy cloning workflow



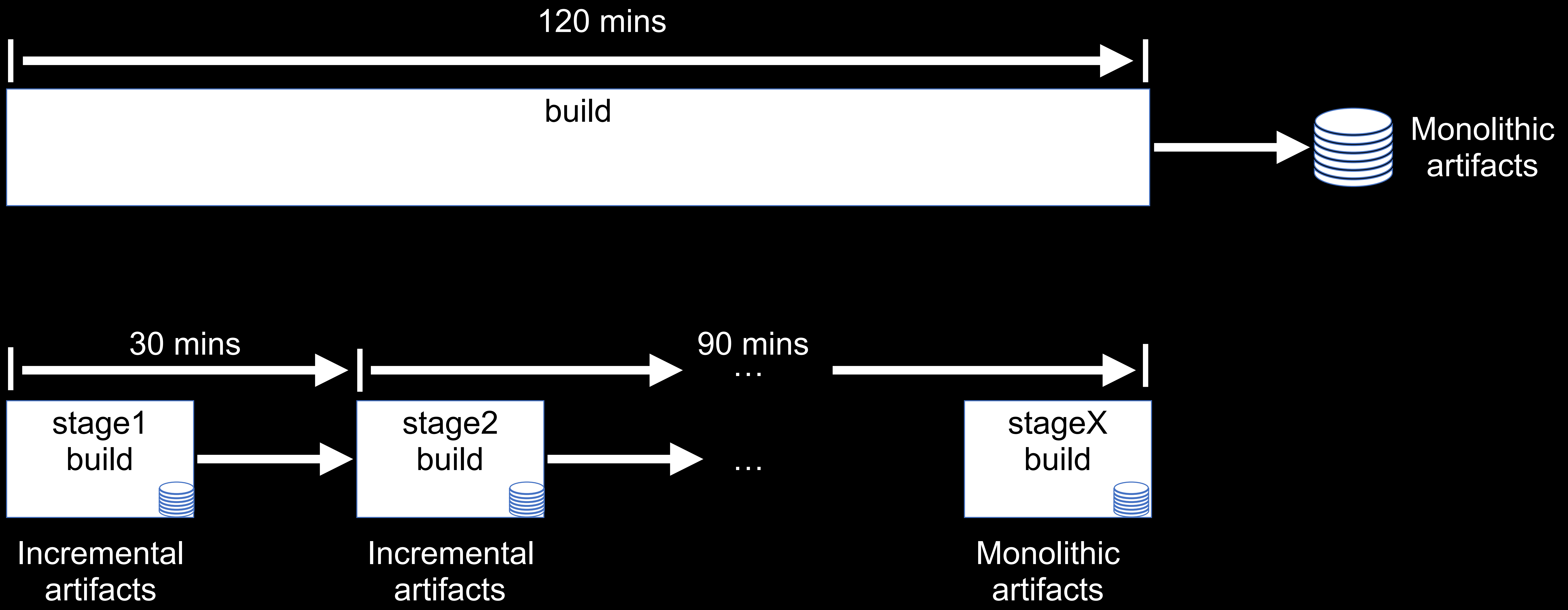
Daily transfer times with any network

500 builds = 24 hrs -> 0

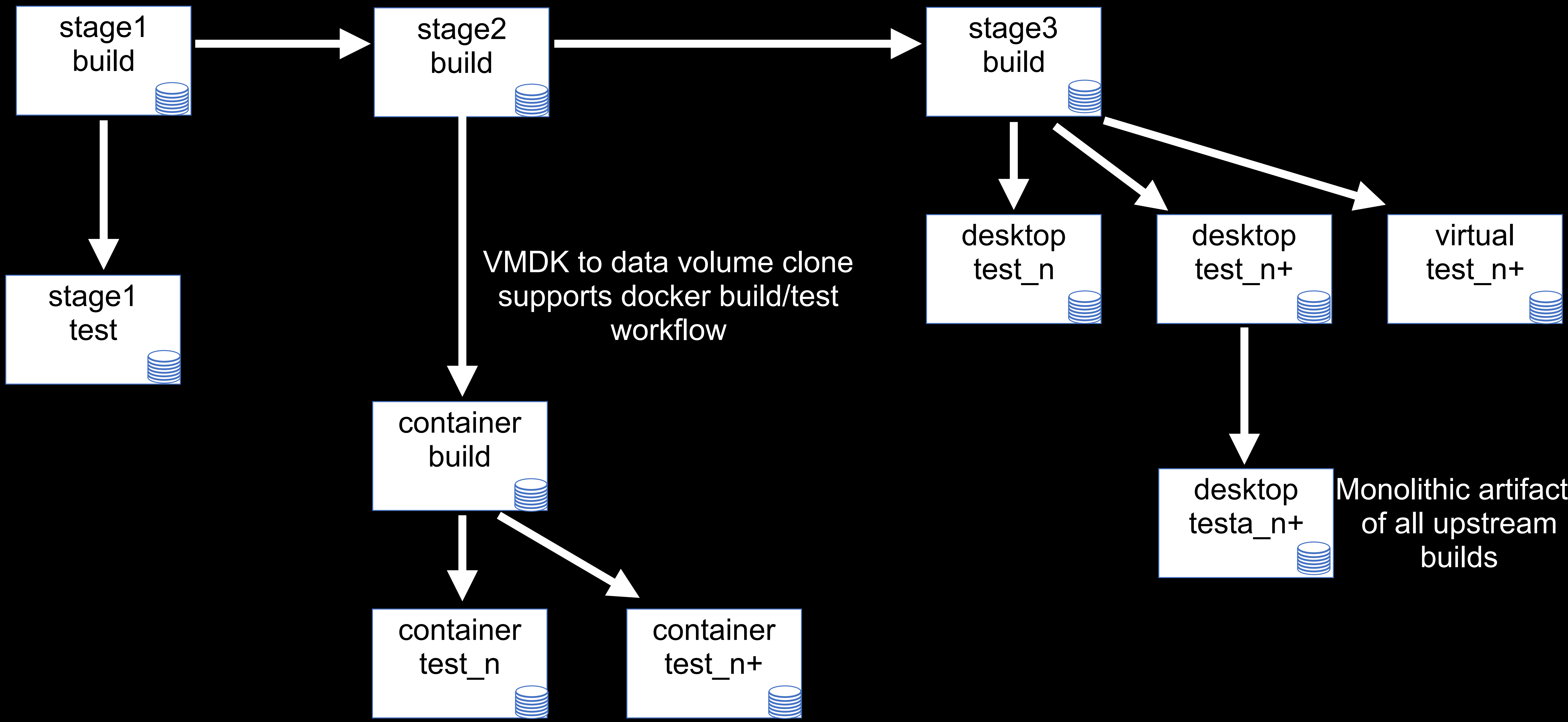
6000 desktop tests = 40 hrs -> 0

1100 virtual tests = 660 hrs -> 0

Incremental to monolithic artifacts



Advanced zero copy workflow



VMDK to data volume clone supports docker build/test workflow

Monolithic artifacts of all upstream builds

Zero copy “out-of-band” implementation

Python module utilizing Jenkins and vSphere APIs

Zero copy “out-of-band” implementation

Python module utilizing Jenkins and vSphere APIs
Runs within a build step

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Manages artifacts

Zero copy “out-of-band” implementation

Python module utilizing Jenkins and vSphere APIs
Runs within a build step
Creates a “worker” VM for each build
Manages artifacts
In production for 3 years

Zero copy artifacts

Operates on a clone (preserves original)

Zero copy artifacts

Operates on a clone (preserves original)
Complete snapshot of entire build/test environment

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Operates on a clone (preserves original)
Complete snapshot of entire build/test environment
Advanced developer actions (e.g., debug live session)

Zero copy artifacts

Operates on a clone (preserves original)
Complete snapshot of entire build/test environment
Advanced developer actions (e.g., debug live session)
CLI and Web browsing

Zero copy benefits

Fast and efficient

Zero copy benefits

Fast and efficient
Reduced storage consumption (data is compressed and deduplicated)

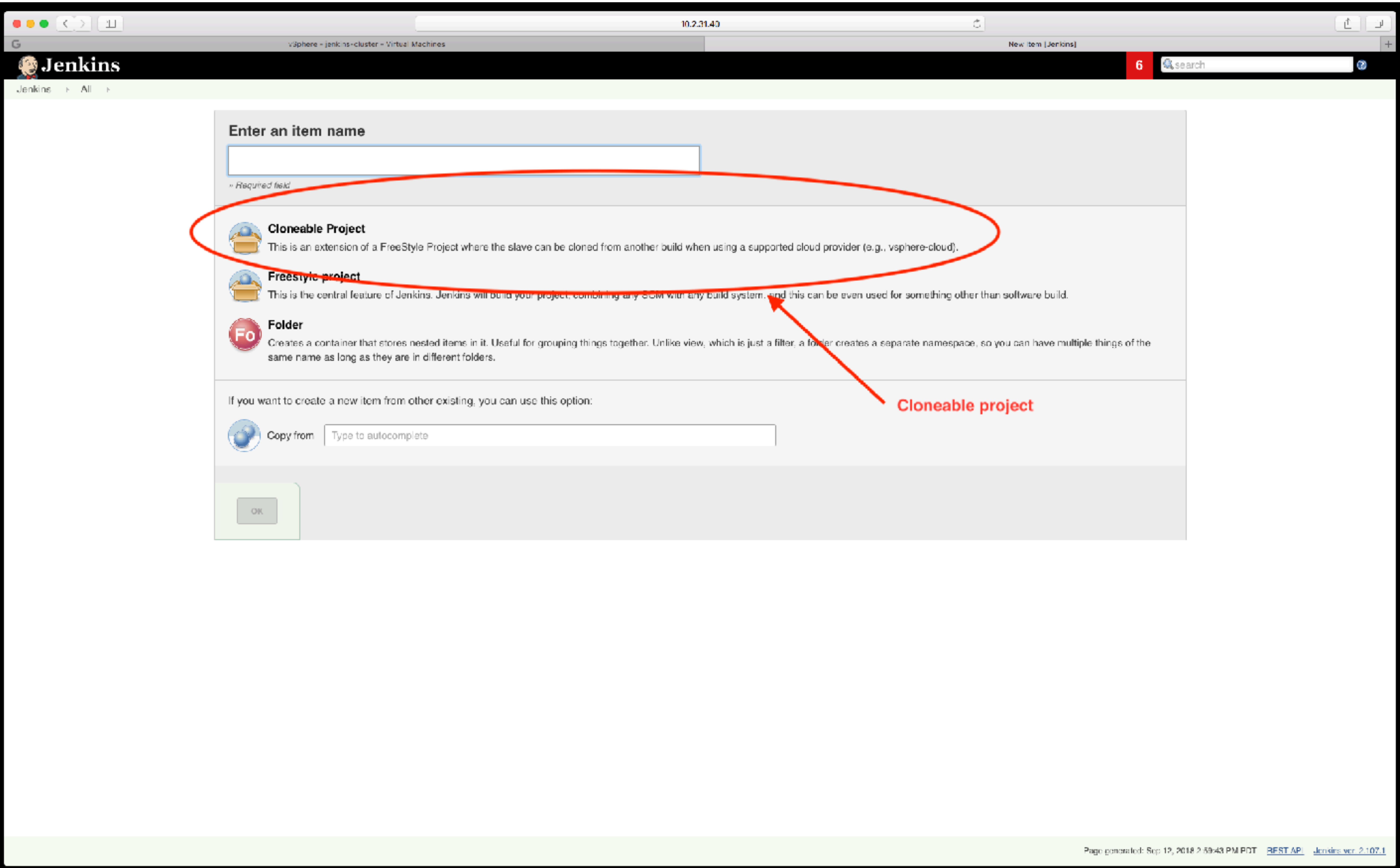
Zero copy benefits

Fast and efficient
Reduced storage consumption (data is cmpressed and deduplicated)
Advanced artifact features

Cloneable project

Based on vSphere-Cloud plugin

Cloneable project



Enter an item name

» Required field

Cloneable Project
This is an extension of a FreeStyle Project where the slave can be cloned from another build when using a supported cloud provider (e.g., vsphere-cloud).

Freestyle project
This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.

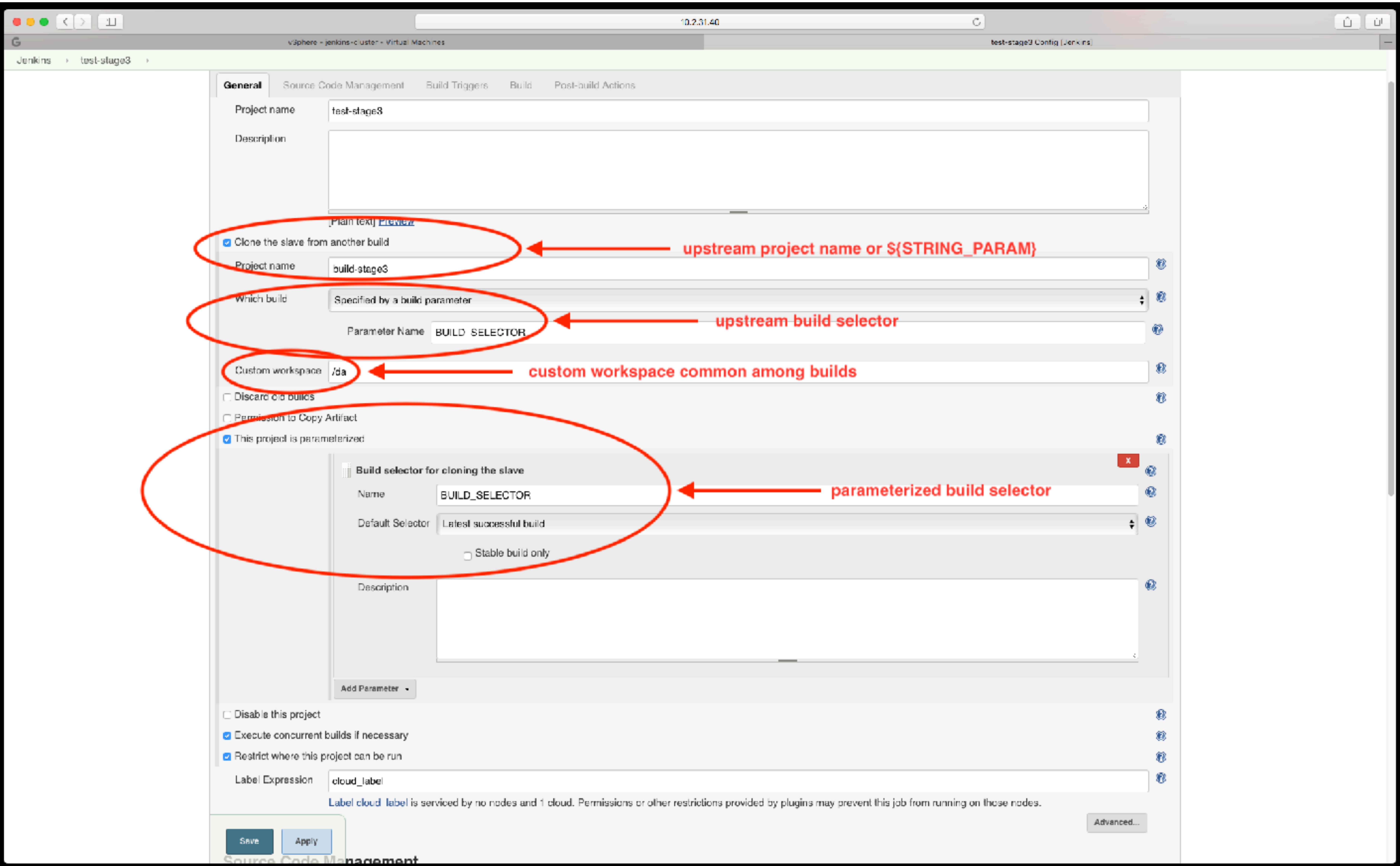
Folder
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.

If you want to create a new item from other existing, you can use this option:

Copy from: Type to autocomplete

Page generated: Sep 12, 2018 2:59:43 PM PDT REST API Jenkins ver. 2.107.1

Cloneable project



Project name: test-stage3

Description:

☑ Clone the slave from another build

Project name: build-stage3

Which build: Specified by a build parameter

Parameter Name: BUILD_SELECTOR

Custom workspace: /da

□ Discard old builds

□ Permission to Copy Artifact

☑ This project is parameterized

Build selector for cloning the slave

Name: BUILD_SELECTOR

Default Selector: Latest successful build

□ Stable build only

Description:

□ Disable this project

☑ Execute concurrent builds if necessary

☑ Restrict where this project can be run

Label Expression: cloud_label

Label cloud_label is serviced by no nodes and 1 cloud. Permissions or other restrictions provided by plugins may prevent this job from running on these nodes.

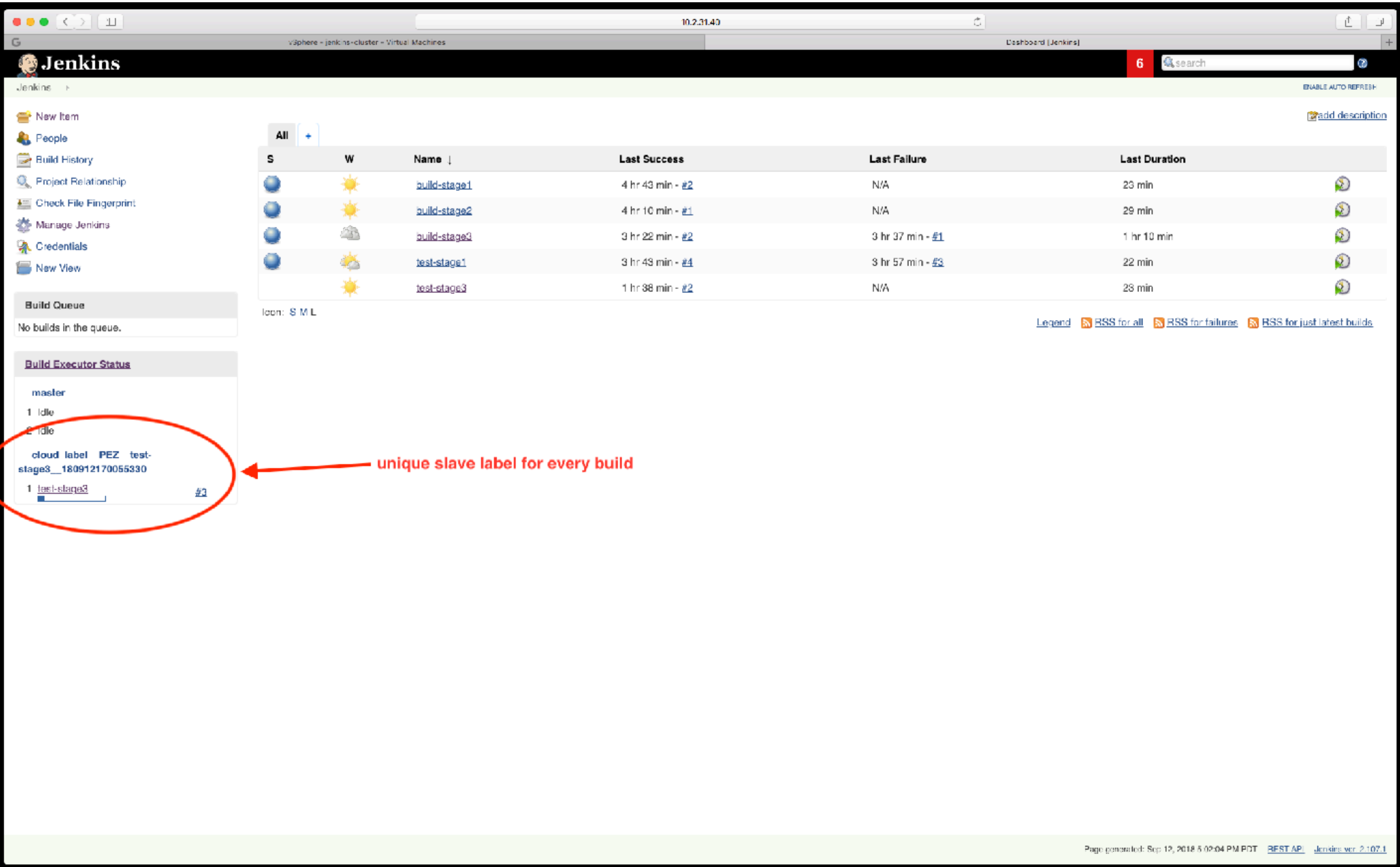
upstream project name or ${STRING_PARAM}

upstream build selector

custom workspace common among builds

parameterized build selector

Cloneable project



S	W	Name ↓	Last Success	Last Failure	Last Duration
●	☀	build-stage1	4 hr 43 min - #2	N/A	23 min
●	☀	build-stage2	4 hr 10 min - #1	N/A	29 min
●	☁	build-stage3	3 hr 22 min - #2	3 hr 37 min - #1	1 hr 10 min
●	⛅	test-stage1	3 hr 43 min - #4	3 hr 57 min - #3	22 min
	☀	test-stage3	1 hr 38 min - #2	N/A	23 min

Build Queue

No builds in the queue.

Build Executor Status

master

1 Idle

2 Idle

cloud label PEZ test-stage3__180912170055330

1 test-stage3 #3

unique slave label for every build

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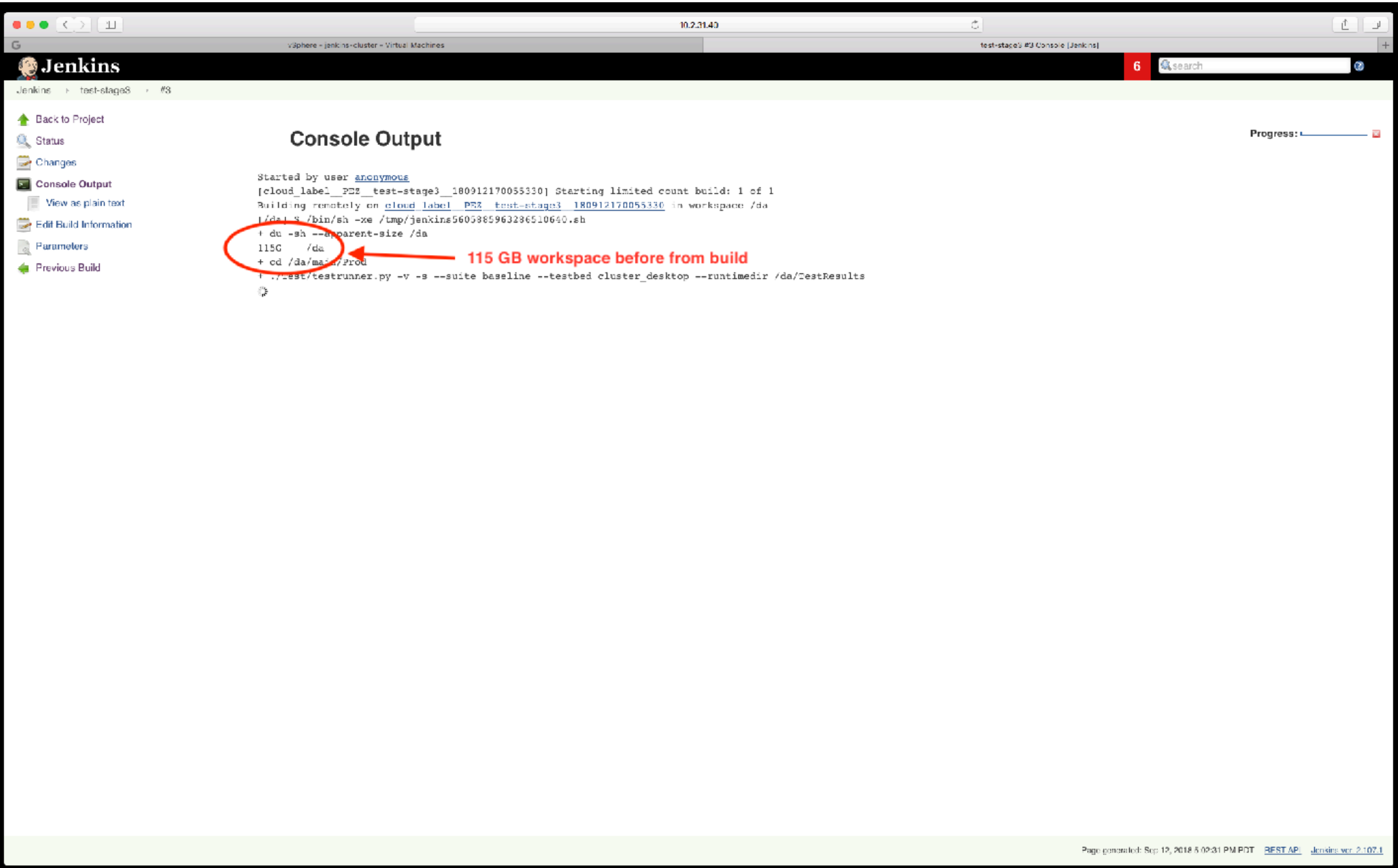
Cloneable project



Console Output

```
Started by user anonymous
[cloud_label__PE2__test-stage3__180912170055330] Starting limited count build: 1 of 1
Building remotely on cloud_label__PE2__test-stage3__180912170055330 in workspace /da
[/da] $ /bin/sh -xe /tmp/jenkins5605885963286510640.sh
+ du -sh --apparent-size /da
115G    /da
+ cd /da/main/Prod
+ ./test/testrunner.py -v -s --suite baseline --testbed cluster_desktop --runtimedir /da/TestResults
```

115 GB workspace before from build

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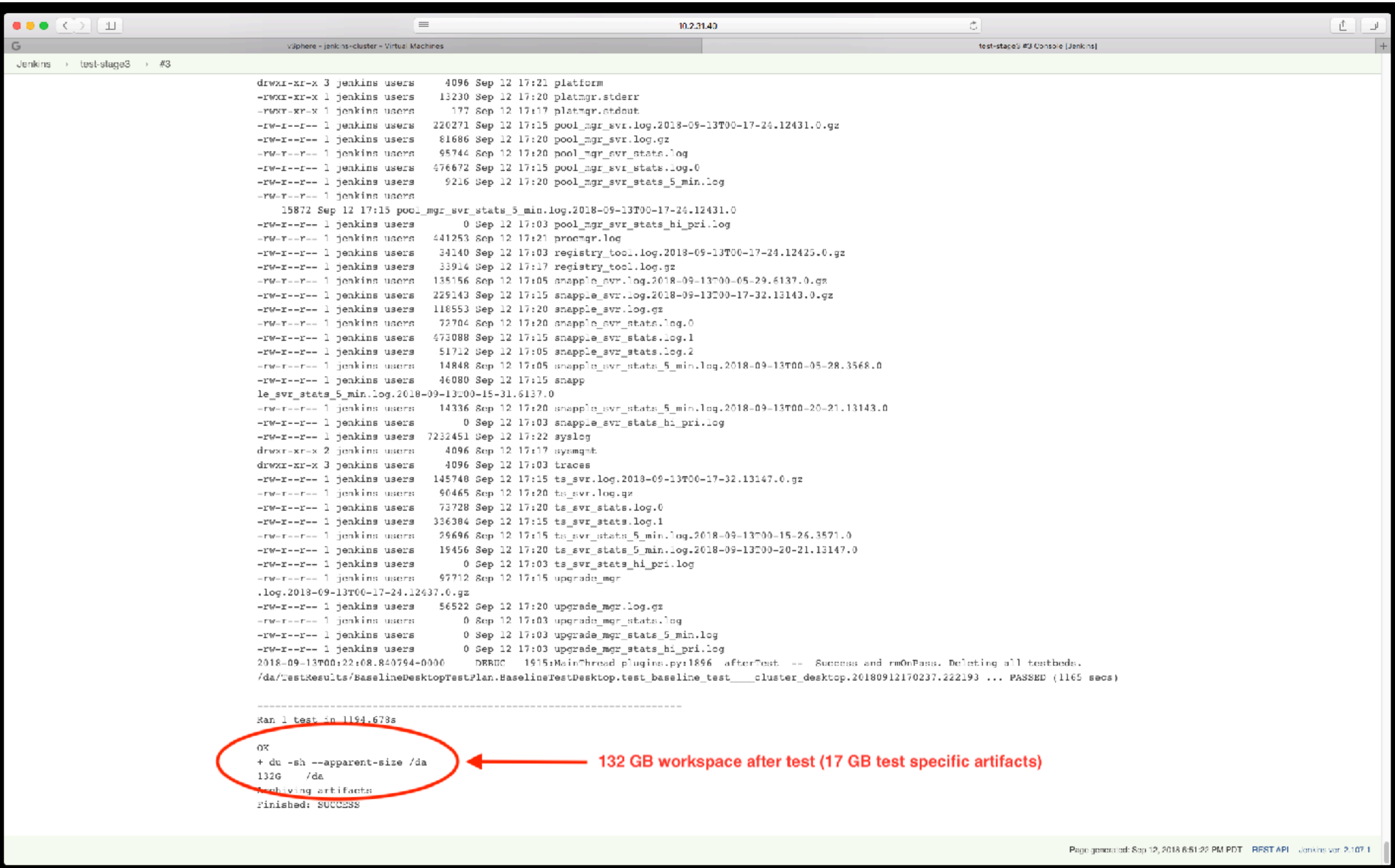
Cloneable project


10.2.31.40
vSphere - jenkins-cluster - Virtual Machines
test-stage3 #3 Console [Jenkins]
Jenkins
test-stage3
#3
Page generated: Sep 12, 2018 6:51:22 PM PDT
REST API
Jenkins ver. 2.107.1

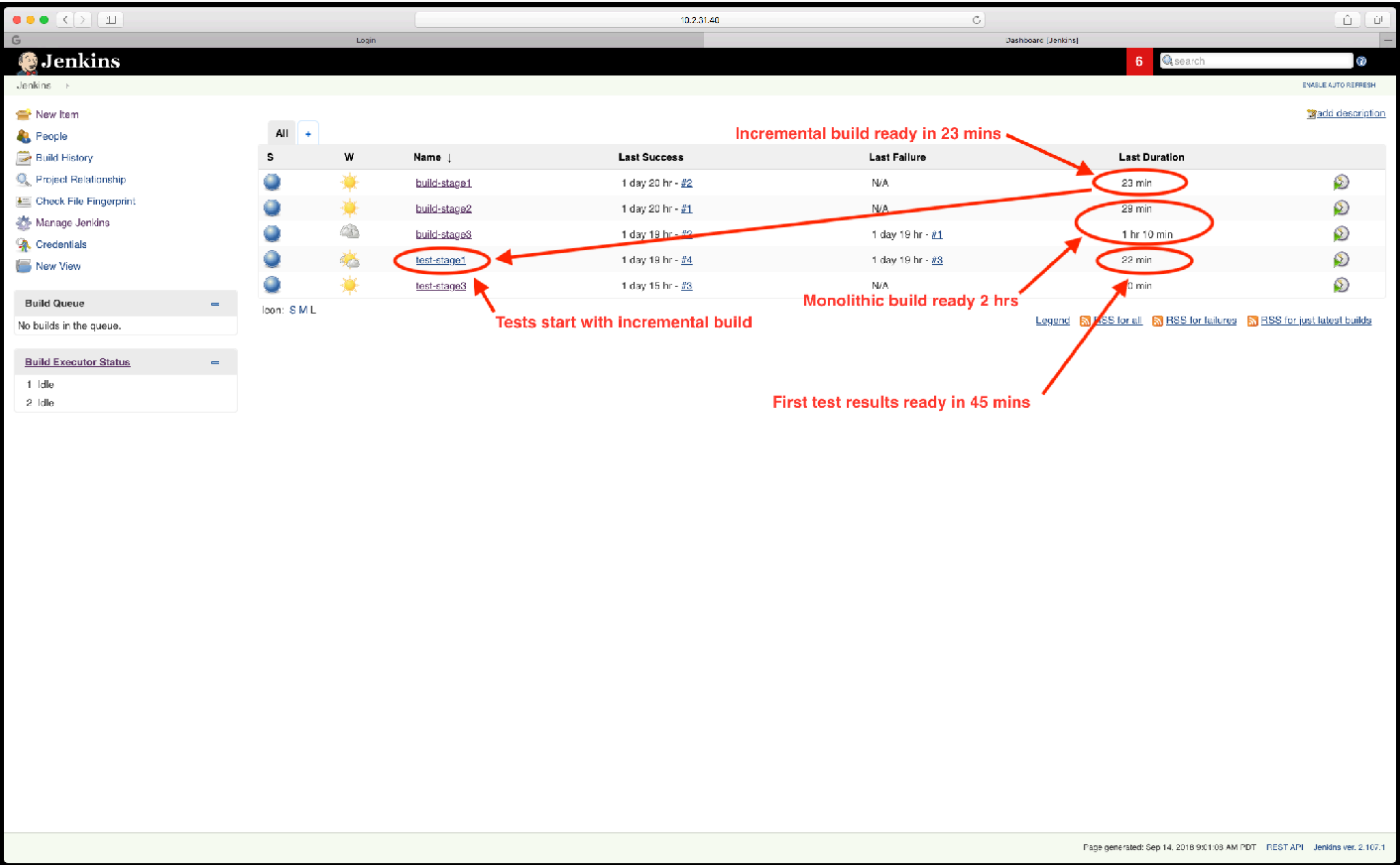
```
drwxr-xr-x 3 jenkins users     4096 Sep 12 17:21 platform
-rwxr-xr-x 1 jenkins users    13230 Sep 12 17:20 platmgr.stderr
-rwxr-xr-x 1 jenkins users      177 Sep 12 17:17 platmgr.stdout
-rw-r--r-- 1 jenkins users   220271 Sep 12 17:15 pool_mgr_svr.log.2018-09-13T00-17-24.12431.0.gz
-rw-r--r-- 1 jenkins users    81686 Sep 12 17:20 pool_mgr_svr.log.gz
-rw-r--r-- 1 jenkins users    95744 Sep 12 17:20 pool_mgr_svr_stats.log
-rw-r--r-- 1 jenkins users   476672 Sep 12 17:15 pool_mgr_svr_stats.log.0
-rw-r--r-- 1 jenkins users     9216 Sep 12 17:20 pool_mgr_svr_stats_5_min.log
-rw-r--r-- 1 jenkins users
    15872 Sep 12 17:15 pool_mgr_svr_stats_5_min.log.2018-09-13T00-17-24.12431.0
-rw-r--r-- 1 jenkins users        0 Sep 12 17:03 pool_mgr_svr_stats_hi_pri.log
-rw-r--r-- 1 jenkins users   441253 Sep 12 17:21 procmgr.log
-rw-r--r-- 1 jenkins users    34140 Sep 12 17:03 registry_tool.log.2018-09-13T00-17-24.12425.0.gz
-rw-r--r-- 1 jenkins users    33914 Sep 12 17:17 registry_tool.log.gz
-rw-r--r-- 1 jenkins users   135156 Sep 12 17:05 snapple_svr.log.2018-09-13T00-05-29.6137.0.gz
-rw-r--r-- 1 jenkins users   229143 Sep 12 17:15 snapple_svr.log.2018-09-13T00-17-32.13143.0.gz
-rw-r--r-- 1 jenkins users   118553 Sep 12 17:20 snapple_svr.log.gz
-rw-r--r-- 1 jenkins users    72704 Sep 12 17:20 snapple_svr_stats.log.0
-rw-r--r-- 1 jenkins users   473088 Sep 12 17:15 snapple_svr_stats.log.1
-rw-r--r-- 1 jenkins users    51712 Sep 12 17:05 snapple_svr_stats.log.2
-rw-r--r-- 1 jenkins users    14848 Sep 12 17:05 snapple_svr_stats_5_min.log.2018-09-13T00-05-28.3568.0
-rw-r--r-- 1 jenkins users    46080 Sep 12 17:15 snapp
le_svr_stats_5_min.log.2018-09-13T00-15-31.6137.0
-rw-r--r-- 1 jenkins users    14336 Sep 12 17:20 snapple_svr_stats_5_min.log.2018-09-13T00-20-21.13143.0
-rw-r--r-- 1 jenkins users        0 Sep 12 17:03 snapple_svr_stats_hi_pri.log
-rw-r--r-- 1 jenkins users  7232451 Sep 12 17:22 syslog
drwxr-xr-x 2 jenkins users     4096 Sep 12 17:17 sysmgmt
drwxr-xr-x 3 jenkins users     4096 Sep 12 17:03 traces
-rw-r--r-- 1 jenkins users   145748 Sep 12 17:15 ts_svr.log.2018-09-13T00-17-32.13147.0.gz
-rw-r--r-- 1 jenkins users    90465 Sep 12 17:20 ts_svr.log.gz
-rw-r--r-- 1 jenkins users    73728 Sep 12 17:20 ts_svr_stats.log.0
-rw-r--r-- 1 jenkins users   336384 Sep 12 17:15 ts_svr_stats.log.1
-rw-r--r-- 1 jenkins users    29696 Sep 12 17:15 ts_svr_stats_5_min.log.2018-09-13T00-15-26.3571.0
-rw-r--r-- 1 jenkins users    19456 Sep 12 17:20 ts_svr_stats_5_min.log.2018-09-13T00-20-21.13147.0
-rw-r--r-- 1 jenkins users        0 Sep 12 17:03 ts_svr_stats_hi_pri.log
-rw-r--r-- 1 jenkins users    97712 Sep 12 17:15 upgrade_mgr
.log.2018-09-13T00-17-24.12437.0.gz
-rw-r--r-- 1 jenkins users    56522 Sep 12 17:20 upgrade_mgr.log.gz
-rw-r--r-- 1 jenkins users        0 Sep 12 17:03 upgrade_mgr_stats.log
-rw-r--r-- 1 jenkins users        0 Sep 12 17:03 upgrade_mgr_stats_5_min.log
-rw-r--r-- 1 jenkins users        0 Sep 12 17:03 upgrade_mgr_stats_hi_pri.log
2018-09-13T00:22:08.840794-0000      DEBUG    1915:MainThread plugins.py:1896  afterTest  --  Success and rmOnPass. Deleting all testbeds.
/da/TestResults/BaselineDesktopTestPlan.BaselineTestDesktop.test_baseline_test____cluster_desktop.20180912170237.222193 ... PASSED (1165 secs)

----------------------------------------------------------------------
Ran 1 test in 1194.678s

OK
+ du -sh --apparent-size /da
132G    /da
Archiving artifacts
Finished: SUCCESS
```

132 GB workspace after test (17 GB test specific artifacts)

“Incremental” builds



10.2.31.40

Login | Dashboard [Jenkins]

Jenkins

6 search

Jenkins ›

ENABLE AUTO REFRESH

- New Item
- People
- Build History
- Project Relationship
- Check File Fingerprint
- Manage Jenkins
- Credentials
- New View

Build Queue

No builds in the queue.

Build Executor Status

1 Idle

2 Idle

add description

All +

S	W	Name ↓	Last Success	Last Failure	Last Duration
●	☀	build-stage1	1 day 20 hr - #2	N/A	23 min
●	☀	build-stage2	1 day 20 hr - #1	N/A	29 min
●	☁	build-stage3	1 day 19 hr - #2	1 day 19 hr - #1	1 hr 10 min
●	⛅	test-stage1	1 day 19 hr - #4	1 day 19 hr - #3	22 min
●	☀	test-stage3	1 day 15 hr - #3	N/A	0 min

Icon: S M L

Legend RSS for all RSS for failures RSS for just latest builds

Incremental build ready in 23 mins

Tests start with incremental build

Monolithic build ready 2 hrs

First test results ready in 45 mins

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Future work

Docker-cloud plugin support (out-of-band implementation works great)

Future work

Docker-cloud plugin support (out-of-band implementation works great)
Better overall integration (artifact handling, extend cloud interface, etc.)

Thanks!

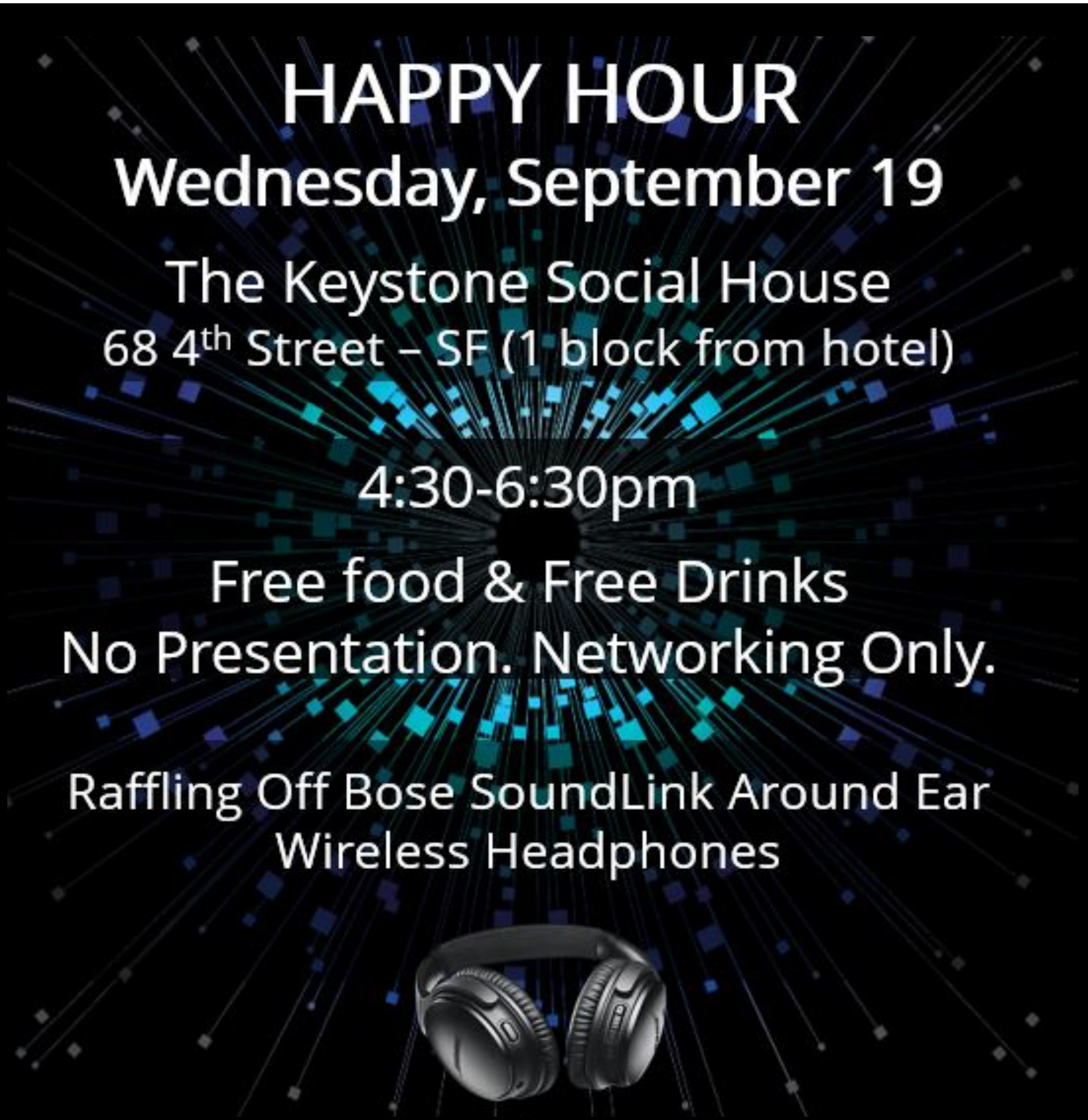
Thanks to all who help to develop and maintain Jenkins!

And for these awesome plugins that we leveraged!

Copy Artifact
vSphere-Cloud

Contacts and more info

anupam@datrium.com
kyle@datrium.com
https://github.com/datrium



HAPPY HOUR

Wednesday, September 19

The Keystone Social House
68 4th Street – SF (1 block from hotel)

4:30-6:30pm

Free food & Free Drinks
No Presentation. Networking Only.

Raffling Off Bose SoundLink Around Ear Wireless Headphones